

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) EP 0 847 030 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
01.12.1999 Bulletin 1999/48

(51) Int. Cl.⁶: G07C 9/00

(43) Date of publication A2:
10.06.1998 Bulletin 1998/24

(21) Application number: 97121056.2

(22) Date of filing: 01.12.1997

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• Boninsegni, Massimo
38037 Predazzo (Trento) (IT)
• Virdia, Antonio
38070 Sopramonte (Trento) (IT)

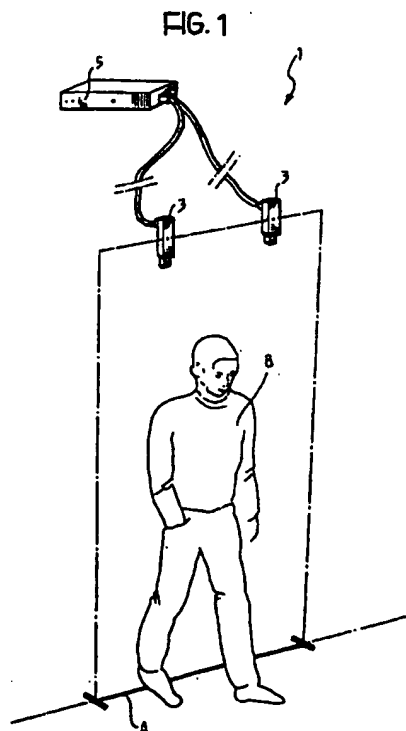
(30) Priority: 04.12.1996 IT TO960984

(71) Applicants:
• ISTITUTO TRENTOINO DI CULTURA
I-38100 Trento (IT)
• Advent S.r.l.
38100 Trento (IT)

(74) Representative:
Bosotti, Luciano et al
c/o JACOBACCI & PERANI S.p.A.
Corso Regio Parco, 27
10152 Torino (IT)

(54) A method and device for automatically detecting and counting bodies passing through a gap

(57) A method for automatically detecting and counting bodies passing through a gap (A) includes the steps of monitoring the gap (A) with means for generating image signals (3; 4, 9) to obtain a succession of images (4a, 4b; L₀, L₁, ..., L_N) of each body (B) passing through the gap (A), of processing these images (4a, 4b; L₀, L₁, ..., L_N) to obtain an altimetric map for each body (B) passing through the gap (A) for each moment considered, of comparing at least one altimetric map obtained with at least one model of altimetric map stored in a processing unit (5), and of activating a counting procedure depending on the result of the comparison.



EP 0 847 030 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 12 1056

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	MECOCCI A ET AL: "IMAGE SEQUENCE ANALYSIS FOR COUNTING IN REAL TIME PEOPLE GETTING INAND OUT OF A BUS" , SIGNAL PROCESSING EUROPEAN JOURNAL DEVOTED TO THE METHODS AND APPLICATIONS OF SIGNAL PROCESSING, VOL. 35, NR. 2, PAGE(S) 105 - 116 XP000435716 ISSN: 0165-1684 ---	1-14	G07C9/00
A	DE 195 16 662 A (FRAUNHOFER GES FORSCHUNG) 14 November 1996 (1996-11-14) * the whole document *	1,5-7, 9-13	
A	EP 0 317 026 A (HEINEKEN TECHNISCHE BEHEER BV) 24 May 1989 (1989-05-24) * abstract * * page 2, line 48 - page 5, line 13 * * claims 1,2; figures 1-3 *	1,5-7, 11-13	
A	EP 0 561 071 A (DATATEC IND INC) 22 September 1993 (1993-09-22) * abstract * * page 3, line 1 - line 26 * * page 3, line 52 - page 5, line 1 * * page 5, line 37 - page 6, line 53 * * figures 1-3 *	1,7	TECHNICAL FIELDS SEARCHED (Int.Cl.6) G07C G06M
A	DE 44 11 448 A (SICK OPTIK ELEKTRONIK ERWIN) 5 October 1995 (1995-10-05) * abstract * * column 1, line 20 - column 4, line 14 * * claims 1-6; figures *	1,7	
-/--			
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 8 October 1999	Examiner Miltgen, E
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (PUB/01)



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 12 1056

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	<p>NAKAMURA J ET AL: "ALGORITHM FOR COUNTING THE NUMBER OF PERSONS USING IR IMAGE PROCESSING", PROCEEDINGS OF THE INSTRUMENTATION AND MEASUREMENT TECHNOLOGY CONFERENCE, ADVANCED TECHNOLOGIES IN I & M HAMAMATSU, MAY 10 - 12, 1994, VOL. VOL. 1, NR. CONF. 10, PAGE(S) 220 - 223, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS XP000507293 ISBN: 0-7803-1881-1</p> <p>-----</p>		
			<p>TECHNICAL FIELDS SEARCHED (Int.Cl.6)</p>
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 8 October 1999	Examiner Miltgen, E
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 97 12 1056

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-10-1999

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
DE 19516662	A	14-11-1996	NONE		
EP 0317026	A	24-05-1989	NL	8702738 A	16-06-1989
			DE	3874093 A	01-10-1992
			GR	3005679 T	07-06-1993
			JP	1200493 A	11-08-1989
			US	4900915 A	13-02-1990
EP 0561071	A	22-09-1993	US	5305390 A	19-04-1994
			AU	1395092 A	07-10-1993
			CA	2064427 A	21-09-1993
			JP	7044674 A	14-02-1995
DE 4411448	A	05-10-1995	US	5903355 A	11-05-1999

EPO FORM P059

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82